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FIG.1A Amino Acid Sequence of the Composite HCV_{HC-J1/C9C/CHI}

10 16 Met Ser Thr Ile Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn 1 And And Pro Gin Asp Val Lys Phe Pro Gly Gly Gin Tie Val Gly Gly Val Tyr Leu Leu Pro Ang Ang Gly Pro Ang Leu Gly Val Ang Ala 33 Thr Ang Lys Thr Ser Giu Ang Ser Gin Pro Ang Gly Ang Ang Gin Pro 49 Ile Pro Lys Val-Arg Arg Pro Glu Gly Arg Thr Trp Ala Glin Pro Gly 65 Tyr Pro Trp Pro Leu Tyr Giy Asn Glu Gly Cys Gly Trp Ala Giy Trp Leu Leu Ser Pro Ang Gly Ser Ang Pro Ser Trp Gly Pro Thr Asp Pro Ang Ang Ang Sen Ang Ash Leu Gly Lys Val Ite Asp Thr Leu Thr Cys 113 Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu 129 Gly Gly Ala Ala Ang Ala Leu Ala His Gly Val Ang Val Leu Glu Asp 145 Gly Val Ash Tyr Ala Thr Gly Ash Leu Pro Gly Cys Ser Phe Ser Ile 161 Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Tyr 177 Gln Val Ang Asn Sen Thr Gly Leu Tyr His Val Thr Asn Asp Cys Pro Asn Ser Ser Ite Val Tyr Glu Ala His Asp Ala Ite Leu His Thr Pro 193 209 Gly Cys Val Pro Cys Va. Ang Glu Gly Ash Val Sen Ang Cys Trp Val 225 Ala Met Thr Pro Thr. Val Ala Thr Ang Asp Gly Lys Leu Pro Ala Thr 241 257 Gin Leu Ang Ang His Ive Asp Leu Leu Val Biy Sen Ata Thr Leu Bys Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Ser val Phe Leu Ile Gly 273 Gin Leu Phe Thr Phe Ser Pro Ang Ang His Trp Thr Thr Gin Giy Cys 289 Ash Cys Ser Ile Tyr Pro Gly His Ile Thr Gly His Ang Met Ala Trp 305 Asp Met Met Met Asn Tro Ser Pro Thr Ala Ala Leu Val Met Ala Gin 321 Leu Leu Ang Ite Pro Gin Ata Ite Leu Asp Met Ite Ata Gty Ata His 337 353 Trp Gly Val Leu Ala Gly Ile Ala Tyr Phe Ser Met Val Gly Asn Trp Ala Lys Val Leu Val Val Leu Leu Leu Phe Ala Gly Val Asp Ala Glu 369 Thr Ile Val Ser Gly Gly Gln Ala Ala Arg Ala Met Ser Gly Leu Val 385 Ser Leu Phe Thr Pro Guy Ala Lys Gln Asn Ile Gln Leu Ile Asn Thr 401 Asn Gly Ser Trp His Ile Asn Ser Thr Ala Leu Asn Cys Asn Giu Ser 417 433 Leu Asn Thr Gly Trp Leu Ala Gly Leu Ile Tyr Gln His Lys Phe Asn Ser Ser Gly Cys Pro Giu Arg Leu Ala Ser Cys Arg Pro Leu Thr Asp 449 Phe Asp Glin Gly Trp Gly Pro Ile Ser Tyr Ala Asn Gly Ser Gly Pro 465 Asp Glin Ang Pro Tyr Cys Trp His Tyr Pro Pro Lys Pro Cys Gly Ite 481 Val Pro Ala Lys Ser Val Cys Gly Pro Val Tyr Cys Phe Thr Pro Ser 497 Pro Val Val Gly Thr Thr Asp Arg Ser Gly Ala Pro Thr Tyr Ser 513 Trp Gly Glu Asn Asp Thr Asp Val Phe Val Leu Asn Asn Thr Arg Pro 529 Pro Leu Gly Asn Trp Phe Gly Cys Thr Trp Met Asn Ser Thr Gly Phe 545 561 Thr Lys Val Cys Giy Ala Pro Pro Cys Val Ile Gly Giy Ala Giy Asn 577 Asn Thr Leu His Cys Pro Thr Asp Cys Phe Arg Lys His Pro Asp Ala Thr Tyr Ser Ang Cys Gly Ser Gly Pro Trp Ile Thr Pro Ang Cys Leu 593 Val Asp Tyr Pro Tyr Arg Leu Trp His Tyr Pro Cys Thr Ite Asn Tyr 609 625 Thr Ile Phe Lys Ile Arg Met Tyr Val Gly Gly Val Glu His Arg Leu 641 Glu Ala Ala Cys Asn Trp Thr Arg Gly Glu Arg Cys Asp Leu Glu Asp 657 Ang Asp Ang Ser Glu Leu Ser Pro Leu Leu Leu Thr Thr Gin Trp Gln Val Leu Pro Cys Ser Phe Thr Thr Leu Pro Ala Leu Ser Thr Gly 673 Leu Ile His Leu His Gin Asn Ile Val Asp Val Gln Tyr Leu Tyr Gly 689 Val Gly Ser Ser Ile Ala Ser Trp Ala Ile Lys Trp Glu Tyr Val Val

FIG.1B

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721 Leu Leu Phe Leu Leu Leu Ala Asp Ala Arg Val Cys Ser Cys Leu Trp
      Met Met Leu Leu Ile Ser Ein Ala Glu Ala Ala Leu Elu Asn Leu Val
      Ile Leu Asn Ala Ala Ser Leu Ala Gly Thr His Gly Leu Yal Ser Phe
      Leu Val Phe Phe Cys Phe Aia Trp Tyr Leu Lys Gly Lys Trp Val Pro
  769
      Gly Ala Val Tyr Thr Phe Tyr Gly Met Tro Pro Leu Leu Leu Leu Leu
      Leu Ala Leu Pro Gln Arg Ala Tyr Ala Leu Asp Thr Glu Val Ala Ala
  801
      Ser Cys Gly Gly Val Val Leu Val Gly Leu Met Ala Leu Tor Leu Ser
      Pro Tyr Tyr Lys Arg Tyr Ile Ser Trp Cys Leu Trp Trp Leu Gin Tyr
 833
      Phe Leu Thr Arg Val Glu Ala Gln Leu His Val Tro Ile Pro Pro Leu
      Ash Val Ang Gly Gly Ang Ash Ala Val Ide Leu Leu Met Cys Ala Val
      His Pro Thr Leu Val Phe Asp Ile Thr Lys Leu Leu Leu Ala Val Phe
 881
      Gly Pro Leu Tro Ile Leu Aso Ala Ser Leu Leu Lys Val Pro Tyr Phe
      Val Ang Val Gin Gly Leu Leu Ang Phe Cys Ala Leu Ala Ang Lys Met
 913
      Ile Gly Gly His Tyn Val Gin Met Val Tie Ile Lys Leu Gly Ala Leu
 929
      Thr Gly Thr Tyr Val Tyr Ash His Leu Thr Pro Leu Ang Asp Tro Ala
 945
      His Ash Gly Leu Ang Ast Leu Ala Val Ala Val Glu Pro Val Val Phe
      Ser Gin Met Giu Thr Lys Leu Ile Thr Tro Gly Ala Asp Thr Ala Ala
      Cys Gly Asp Ite Ite Ash Gry Leu Pho Val Ser Ata Ang Ang Gly Ang
 993
      Giu Ile Leu Leu Sty Pro Ala Asp Gly Met Val Ser Lys Gly Tro Arg
      Leu Leu Ala Pro Ile Thr Ala Tyr Ala Gin Gin Thr Ang Gly Leu Leu
1025
      Gly Cys Ile Ile Thr Sen Leu Thr Gly Ang Asp Lys Ash Gin Val Glu
1041
      Gly Glu Val Gin Ile Val Sen Thr Ala Ala Gin Thr Phe Leu Ala Thr
1057
      Cys Ile Asn Gly Val Cys Inp Thr Val Tyr His Gly Ala Gly Thr Ang
1073
      Thr Ile Ala Ser Pro Lys Bly Pro Val Ile Gln Met Tyr Thr Asn Val
1089
      Asp Gln Asp Leu Val Gry Tro Pro Ala Pro Gln Gly Ser Ang Ser Leu
1105
      Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Ang His
1121
      Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu
1137
      Leu Ser Pro Arg Pro Ite Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro
1153
      Leu Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val
1169
      Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Asn
1185
     Leu Glu Thr Thr Met Arg Ser Pro Val Phe Trp Asp Asn Ser Ser Pro
1201
      Pro Val Val Pro Gln Ser Phe Gin Val Ala His Leu His Ala Pro Thr
1217
      Gly Ser Gly Lys Ser Trr Lys Val Pro Ala Ala Tyr Ala Ala Gin Gly
1233
      Tyr Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe
1249
     Gly Ala Tyr Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr
1265
     Gly Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr
1281
      Gly Lys Phe Leu Aia Asp Gly Gly Cys Sen Gly Gly Ala Tyn Asp Ile
1297
      Ile Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly.
1313
      Ile Gly Thr Val Leu Asp Gin Ale Glu Thr Ale Gly Ale Arg Leu Val
1329
     Val Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro
1345
     Asn Ite Glu Glu Val Ala Leu Ser Thr Thr Gly Glu Ite Pro Phe Tyr
1361
     Gly Lys Ala Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile
1377
     Phe Cys His Ser Lys Lys Lys Cys Asp Giu Leu Ala Ala Lys Leu Val
1393
     Ala Leu Gly Ile Asr Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser
     Val Ile Pro Thr Ser Gly Asp Val Val Val Val Ala Thr Asp Ala Leu
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FIG.1C

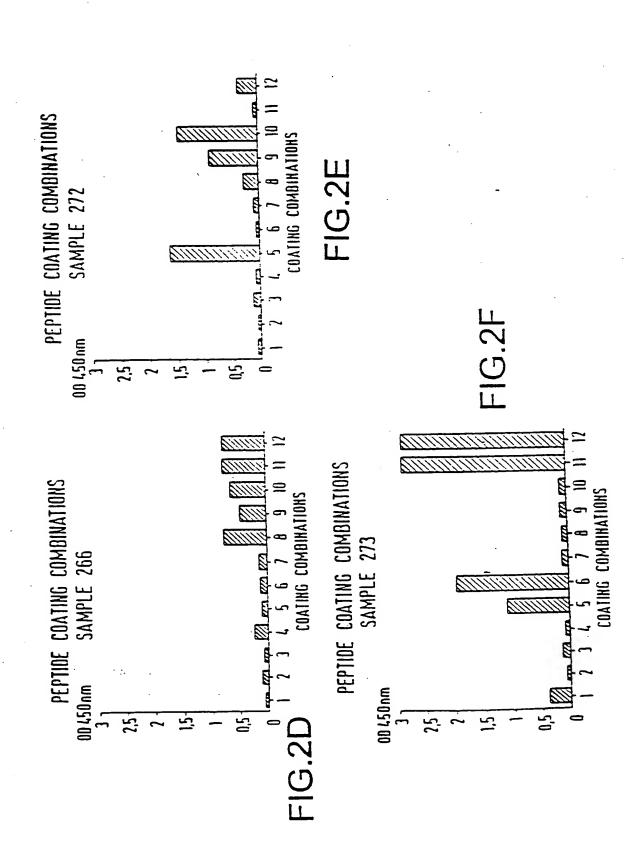
Met Thr Gly Tyr Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gin Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ite Glu Thr I le Thr Leu Pro Gin Asp Ala Val Ser Arg Thr Gin Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Ang Pro Ser Gly Met Phe Aso Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr 1521 Val Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln 1537 Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile 1553 Asp Ala His Phe Leu Ser Gln Thr Lys Gly Ser Gly Glu Asn Leu Pro 1569 Tyr Leu Val Ala Tyr Gin Ala Thr Val Cys Ala Arg Ala Gin Ala Pro 1585 Pro Pro Ser Tro Aso Gin Met Tro Lys Cys Leu Ile Ang Leu Lys Pro 1601 Thr Leu His Gly Pro Thr Pro Leu Leu Tyr Ang Leu Gly Ala Val Gin 1617 Ash Glu Ile Thr Leu Thr His Pho. Vol. Thr Lys Tyr Ile Met Thr Cys 1633 Met Sen Ala Asp Leu Giu Val Val Thr Sen Thr Tro Val Leu Val Giy Gly Val Leu Ala Ala Leu Ala A a Tyr Cys Leu Ser Thr Gly Cys Val 1665 Val Ite Val Gly Ang Val Val Leu Ser Gly Lys Pro Ala Ite Ite Pro Asp Ang Glu Val Leu Tyn Ang Glu Phe Asp Glu Met Glu Glu Cys Sen 1697 Gin His Leu Pro Tyr Ile Giu Gin Gly Met Met Leu Ala Giu Gin Phe 1713 Lys Gln Lys Ala Leu Gly Leu Leu Gin Thr Ala Ser Arg Gln Ala Glu 1729 Val Ile Ala Pro Ala Val Gin Thr Asn Trp Gin Lys Leu Glu Thr Phe 1745 Trp Ala Lys His Met Tro Asn Pre ile Ser Gly Ile Gln Tyr Leu Ala 1761 Gly Leu Ser Thr Leu Pro Gly Ash Pro Ala Ile Ala Ser Leu Met Ala 1777 Phé Thr Ala Ala Val Thr Ser Pro Leu Thr Thr Ser Gln Thr Leu Leu Phe Ash Ite Leu Giy Giy Trp Val Ala Ala Gin Leu Ala Ala Pro Giy 1809 Ala Ala Thr Ala Phe Val Gly Ala Gly Leu Ala Gly Ala Ala Ile Gly 1825 Ser Val Gly Leu Gly Lys Val Leu Ile Asp Ile Leu Ala Gly Tyr Gly 1841 Ala Gly Val Ala Gly Ala Leu Val Ala Phe Lys Ile Met Ser Gly Glu 1857 Val Pro Ser Thr Glu Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser 1873 Pro Gly Ala Leu Val Val Gly Va! Val Cys Ala Ala Ile Leu Arg Arg 1889 His Val Gly Pro Gly Glu Gly Aia Val Gin Trp Met Asn Arg Leu Ile 1905 Ala Phe Ala Ser Arg Gly Asn His Val Ser Pro The His Tyr Val Pro 1921 Glu Ser Asp Ala Ala Ala Arg Val Thr Ala Ile Leu Ser Ser Leu Thr 1937 Val Thr Gln Leu Leu Arg Arg Leu His Gln Trp Ile Ser Ser Glu Cys 1953 Thr Thr Pro Cys Ser Gly Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Aso Phe Lys Thr Trp Leu Lys Ala Lys Leu Met 1985 Pro Gln Leu Pro Gly Ile Pro Phe Val Ser Cys Gin Arg Gly Tyr Lys 1002 Gly Val Trp Arg Val Asc Gly Ile Met His Thr Arg Cys His Cys Gly 2017 Ala Glu Ile Thr Gly His Val Lys Asn Gly Thr Met Arg Ile Val Gly 5033 Pro Arg Thr Cys Arg Asn Met Tro Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Arg Leu Pro Ala Pro Asn Tyr Thr Phe 2065 Ala Leu Tro Arg Val Ser Ala Glu Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly Met Thr Thr Asp Asn Leu Lys Cys 2097 Pro Cys Gin Val Pro Ser Pro Glu Phe Phe Thr Giu Leu Asp Gly Val 2113 Ang Leu His Ang Phe Ala Pro Pro Cys Lys Pro Leu Leu Ang Glu Glu 2129 Val Ser Phe Arg Val Gly Leu His Glu Tyr Pro Val Gly Ser Gln Leu

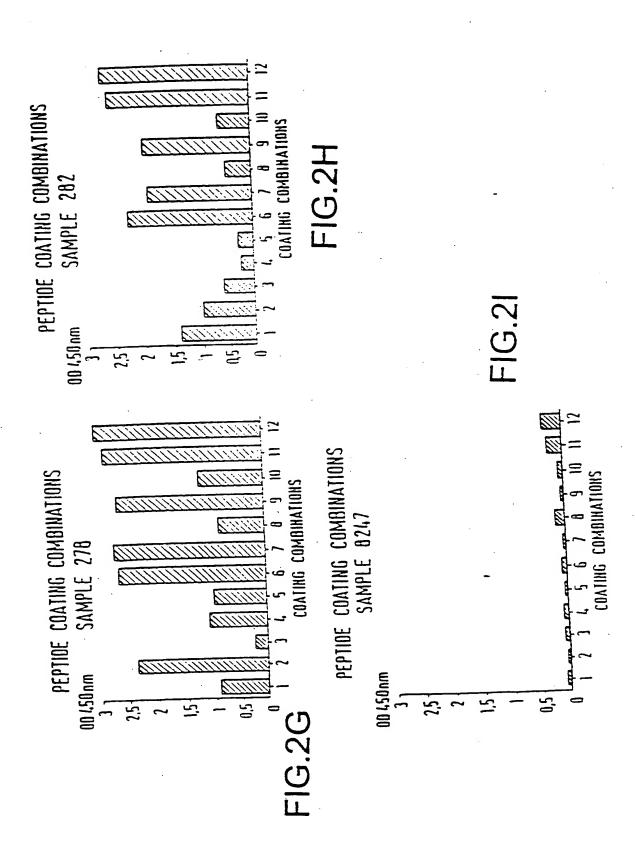
FIG.1D

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2161 Pro Cys Giu Pro Giu Pro Asp Val Aia Val Leu Thr Ser Met Leu Thr
2177 Asp Pro Ser His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu Ala Arg
2193 Gly Ser Pro Pro Ser Va! Ala Ser Ser Ser Ala Ser Glin Leu Ser Ala
2209 Pro Ser Leu Lys Ala Thr Cys Thr Ala Ash His Asp Ser Pro Asp Ala
2225 Glu Leu Ile Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn
2241 Ile Thr Arg Val Giu Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe
2257 Asp Pro Leu Val Ala Glu Glu Asp Glu Arg Glu Ile Ser Val Pro Ala
2273 Glu Ile Leu Ang Lys Ser Ang Ang Phe Ala Gin Ala Leu Pro Val Trp
2299 Ala Ang Pro Asp Tyr Ash Pro Pro Leu Val Glu Thr Trp Lys Lys Pro
2305 Asp Tyr Glu Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Lys
2321 Ser Pro Pro Val Pro Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr
2337 Glu Sen Thr Leu Sen Thr Ala Leu Ala Glu Leu Ala Thr Ang Sen Phe
2353 Gly Ser Ser Ser Thr Ser Gly Ile Thr Gly Asp Ash Thr Thr Thr Ser
2369 Sen Glu Pro Ala Pro Sen Gly Cys Pro Pro Aso Sen Aso Ala Glu Sen
2385 Fyr Ser Ser Met Pro Pro Leu Glu 3.y Stu Pro G'y Asp Pro Asp Leu
2401 Sen Asp Gly Sen Trp Sen Thr Val Sen Cen Glu Ala Ash Ala Glu Asp
     Val Val Cys Cys Ser Met Ser Tyn Ser Ins Thr Gly Ala Cys Val Thr
2417
2433 Pro Cys Ala Ala Glu Glu Gin Lys Leu Pro Ile Asr Ala Leu Ser Asn
     Sen Leu Leu Ang His His Ash Leu Vol Tyn Sen Thr Thr Sen Ang Sen
2465 Ala Cys Gin Ang Gin Lys Lys Val Thr Phe Asp Ang Leu Gin Val Leu
2481 Asp Ser His Tyr Gin Asp Val Leu Lys Blu Val Lys Ala Ala Ala Ser
2497 Lys Val Lys Ala Asn Leu Leu Ser Val Glu Glu Ala Cys Ser Leu Thr
2513 Pro Pro His Ser Ala Lys Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val
2529 Ang Cys His Ala Ang Lys Ala Val Thr His Tie Ash Ser Val Trp Lys
2545 Asp Leu Leu Glu Asp Ash Val Thr Pho Ile Asp Thr Thr Ile Met Ala
2561 Lys Asn Glu Val Phe Cys Val Gin Pro Glu Lys Gly Gly Ang Lys Pro
2577 Ala Ang Leu Ile Val Phe Pro Asc Leu Gly Val Ang Val Cys Glu Lys
2593 Met Ala Leu Tyn Asp Val Val Thr Lys Leu Pro Leu Ala Val Met Gly
2609 Ser Ser Tyr Gly Phe Gln Tyr Ser Pro Gly Gln Ang Val Glu Phe Leu
2625 Val Glin Ala Trp Lys Ser Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp
2641 Thr Ang Cys Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Ang Thr Glu
2657 Glu Ala Ile Tyr Gln Cys Cys Asp Leu Asp Pro Gin Ala Arg Val Ala
2673 Ile Lys Ser Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn
2689 Ser Ang Gly Glu Asn Cys Gly Tyr Ang Ang Cys Ang Ala Ser Gly Val
2705 Leu Thr Thr Ser Cys Gly Ash Thr Leu Thr Cys Tyr Ile Lys Ala Arg
2721 Ala Ala Cys Ang Ala Ala Gly Leu Gin Asp Cys Thr Met Leu Val Cys
2737 Gly Asp Asp Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp
2753 Ala Ala Ser Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala
2769 Pro Pro Gly Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr
2785 Ser Cys Ser Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg
2801 Val Tyr Tyr Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala
2917 Trp Glu Thr Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile
2833 Ile Met Phe Ala Pro Thr Leu Trp Ala Ang Met Ile Leu Met Thr His
2849 Phe Phe Ser Val Leu Ile Ala Arg Asp Glin Leu Glu Glin Ala Leu Asp
2965 Cys Glu Ile Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Aso Leu Pro
2981 Pro Ile Ile Gin Arg Leu Giy Cys Pro Glu Arg Leu Ala Ser
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PEPTIDE COATING COMBINATIONS

n SAMPLE 284 (undiluted) COATING COMBINATIONS Antibody binding to individual peptides and various mixtures in an ELISA assay. FIG.2C PEPTIDE COATING COMBINATIONS SAMPLE 287 PEPTIDE COATING COMBINATIONS COATING COMBINATIONS 00 l.50 nm 00450nm





Inventor: DeLeys et al SN Div. of SN 10/044,995 Atty Dkt 2551-141/Sheet 8 of 8

